

IN THE CLAIMS:

Claims 12, 18-28, and 51-67 were previously cancelled. Claims 1-11, 13-17, and 29-50 are pending, and Claims 2-11 and 16 have been allowed.

Please cancel Claims 15, 17, 32, 38, and 43-50.

Claims 34, 41, and 42 are rewritten in independent form as per the Examiner's allowance.

Please also amend the claims as follows, and add Claims 68-94 (none constitute new matter) as follows:

CLAIMS:

1. (Currently Amended): An individually ~~or substantial~~ individually molded member for use as a railroad tie, ~~lumber~~ or other structural member having a constant density, comprising:

_____ a mixture of:

from about 25% to about 55% of a thermoplastic polymer;

from about 4% to about 55% of a rubbery polymeric component; and

from about 4% to about 55% of a reinforcing filler; and

wherein said member is formed by extruding said mixture into an individual mold and wherein said constant density is controlled during a filling of said mold.

2. (Allowed): A process for forming a molded member for use as a railroad tie, lumber or other structural member, comprising the steps of:

mixing materials comprising,

from about 25% to about 55% of a thermoplastic polymer;

from about 4% to about 55% of a rubbery polymeric component; and

from about 4% to about 55% of a reinforcing filler;

injecting or extruding said mixture into a mold having at least one side, said mixture at least partially filling said mold, such that said mixture has at least one side surface and an interior portion;

cooling said mixture whereby said at least one side surface is at least partially

hardened, thereby at least partially forming a member;

removing said member from said mold before said interior portion of said mixture is substantially hardened;

placing said member within or about a cooling apparatus; and

rotating said member about said cooling apparatus whereby said interior is at least substantially hardened.

3. (Allowed): The method of Claim 2 wherein said thermoplastic polymer is comprised of at least one of the materials selected from the group of materials consisting essentially of recycled polyolefins, recycled bucket resin, recycled drum resin, densified film, recycled grocery bags, electric wire coating, and recycled bottle resin or any combination thereof.

4. (Allowed): The method of Claim 2 wherein said rubbery component is comprised of at least one of the materials selected from the group of materials consisting essentially of crumb rubber, automotive fluff, tire belt fluff, carpet backing, rubber backing and recycled circuit boards or any combination thereof.

5. (Allowed): The method of Claim 2 wherein said reinforcing filler is comprised of at least one of the materials selected from the group of materials consisting essentially of carbon black, fly ash, mica, fiberglass, ~~aragonite~~aragonite, crushed concrete, sand and crushed glass or any combination thereof.

6. (Allowed): The method of Claim 2 wherein said materials each comprise from about 25% to 55% of said mixture.

7. (Allowed): The method of claim 2 wherein said thermoplastic polymer and rubbery components comprise at least 20% of said mixture.

8. (Allowed): The method of claim 2 where in said mixture is heated by

frictional and/or compressive heating of said mixer.

9. (Allowed): The method of Claim 2 wherein said mixture is at least partially heated by an external heat source.

10. (Allowed): The method of Claim 9 wherein said mixture is heated to about 380 degrees to about 440 degrees.

11. (Allowed): The method of Claim 8 wherein said mixture is preferably heated to about 400 degrees to about 420 degrees.

12. (Previously Cancelled)

13. (Currently Amended): A process for forming a molded member for use as a railroad tie, ~~lumber~~ or other structural members, comprising the steps of:

mixing portions from about 25% to about 55% of a thermoplastic polymer,
with from about 4% to about 55% of a rubbery polymeric component;
with from about 4% to about 55% of a reinforcing filler in a Banbury mixer or
other closed chamber mixer to mix until said portions to form a flowable mixture; and
extruding said mixture into a mold having at plurality of ~~at least one side
walls, said mixture at least partially filling said mold, such that said mixture has at least one
side surface and an interior portion;~~
using a piston and brake to control the filling of said mold; and
closing the mold when it is filled.

14. (Currently Amended): A polymeric composite for usage in molding applications for railroad ties or other structured members comprising:

a thermoplastic polymer component comprising recycled polyolefin, recycled copolymers thereof or combinations thereof and comprising about 25% to about 55% of said composite;

a recycled rubbery polymeric component comprising about 4% to about 55% of said composite;

a recycled reinforcing filler component comprising about 4% to about 55% of said composite; ~~and, wherein said reinforcing filler is comprised of at least one of the materials selected from the group of materials consisting essentially of carbon black, fly ash, mica, fiberglass, aragonite, crushed concrete, sand and crushed glass and any combination thereof; and~~

~~a foaming agent comprising less than 1% of said composite;~~

~~wherein the thermoplastic polymer component, rubbery polymeric component, and reinforcing filler are heated by frictional and compressive mixing in an closed chamber mixer until such components reach about 380 °F to about 440 °F degrees.~~

15. (Cancelled)

16. (Allowed): A process for forming a member having a plurality of surfaces, for use as a railroad tie, lumber or other structural member, comprising the steps of:

mixing,

about 25% to about 55% of a thermoplastic polymer;

about 4% to about 55% of a rubbery polymeric component;

about 4% to about 55% of a reinforcing filler;

injecting said mixture into a mold having at least one wall, wherein said mixture at least partially fills said mold about said wall, such that said mixture has at least one side surface along said wall and an interior portion;

cooling said mixture whereby said at least one surface is at least partially hardened thereby at least partially forming a member;

removing said member from said mold before said interior portion is substantially hardened;

placing said member about a cooling apparatus

rotating said member about said cooling apparatus whereby said interior is at least substantially hardened; and

texturing at least one surface of said member.

17. (Newly Cancelled)

18-28. (Previously Cancelled)

29. (Newly Cancelled)

30. (Currently Amended): The process of Claim 13, further comprising the step of using a valve to control the feed of said mixture into said mold.

31. (Currently Amended): The process of Claim ~~30~~29, further comprising the step of using an extruder between said Banbury mixer or other ~~open~~enclosed chamber mixer and said valve to transport said mixture to said valve.

32. (Cancelled)

33. (Currently Amended): The process of Claim 31, further comprising the step of adjustably controlling a density of said extrudable material with a piston while the mold is being filled.

34. (Currently Amended & Allowable): A process for forming a molded member for use as a railroad tie, lumber or other structural member, comprising the steps of:

mixing portions from about 25% to about 55% of a thermoplastic polymer,

with from about 4% to about 55% of a rubbery polymeric component;

with from about 4% to about 55% of a reinforcing filler until said portions form a flowable mixture;

feeding said mixture into a mold having at least one side wall, said mixture at least partially filling said mold, such that said mixture has at least one side surface and an interior portion;

using a Banbury mixer or other ~~open~~ closed chamber mixer to mix said mixture;

using an extruder between said Banbury mixer or other closed chamber mixer and said valve to transport said mixture to said valve;

adjustably controlling a density of said extrudable material; and

~~The process of Claim 33, wherein at least one brake and/or at least one gear is used to control said density.~~

35. (Currently Amended): The process of Claim 13, further comprising the step of ~~using a plurality of molds and filling at least one mold at a time.~~

36. (Currently Amended): The ~~apparatus process~~ of Claim 35, further comprising the step of using a first diverter station valve and a second diverter station to select the mold to be filled ~~fill at least one mold at a time.~~

37. (Currently Amended): The process of Claim 13, further comprising the step of cooling said molded mixture whereby said at least one side surface until the mixture is at least partially hardened thereby at least partially forming a member.

38. (Newly Cancelled)

39. (Currently Amended): The process of Claim ~~13~~38, further comprising the step of placing the closed mold in a waterbath during cooling.

40. (Currently Amended): The process of Claim ~~39~~37, further comprising the steps of:
removing said member from said mold before an~~said~~ interior portion is hardened; and

rotating said member upon a cooling apparatus until said interior of said member is hardened and/or cooled; and

whereby said rotation relieves internal stresses and prevents warpage.

41. (Currently Amended & Allowable): A process for forming a molded member for use as a railroad tie, lumber or other structural member, comprising the steps of:

mixing portions from about 25% to about 55% of a thermoplastic polymer,

with from about 4% to about 55% of a rubbery polymeric component;

with from about 4% to about 55% of a reinforcing filler until said portions form a flowable mixture;

feeding said mixture into a mold having at least one side wall, said mixture at least partially filling said mold, such that said mixture has at least one side surface and an interior portion;

closing the mold after it is filled;

placing the closed mold in a waterbath during cooling;

removing said member from said mold before said interior portion is hardened;

~~The process of Claim 40, further comprising the steps of:~~

placing said member within or about a cooling apparatus; and

rotating said member about said cooling apparatus until said interior of said member is at least substantially hardened and/or cooled.

42. (Currently Amended & Allowable): A process for forming a molded member for use as a railroad tie, lumber or other structural member, comprising the steps of:

mixing portions from about 25% to about 55% of a thermoplastic polymer,

with from about 4% to about 55% of a rubbery polymeric component;

with from about 4% to about 55% of a reinforcing filler until said portions form a flowable mixture;

feeding said mixture into a mold having at least one side wall, said mixture at least partially filling said mold, such that said mixture has at least one side surface and an interior portion;

closing the mold after it is filled;

placing the closed mold in a waterbath during cooling;

removing said member from said mold before said interior portion is hardened;

placing said member within or about a cooling apparatus;

rotating said member about said cooling apparatus until said interior of said member is at least substantially hardened and/or cooled; and

The process of Claim 41, further comprising the step of: texturing at least one surface of said member.

43-50 (Newly Cancelled)

51-67. (Previously Cancelled)

68 (New): The member of Claim 1, wherein said density is controlled by a brake and piston.

69. (New): The member of Claim 1, wherein said density is computer controlled by a piston.

70. (New): The member of Claim 1, having a predetermined length and wherein said density is constant along said length of said member.

71. (New): An individually molded member for use as a railroad tie or other structural member having a varied density, comprising:
a mixture of:
from about 25% to about 55% of a thermoplastic polymer;
from about 4% to about 55% of a rubbery polymeric component; and
from about 4% to about 55% of a reinforcing filler; and wherein said member is formed by extruding said mixture into an individual mold and wherein said varied density is controlled during a filling of said mold.

72. (New): The member of Claim 71, wherein said density is controlled by a brake and piston.

73. (New): The member of Claim 71, wherein said density is computer controlled by a piston.

74. (New): The member of Claim 71, having a predetermined length and wherein said density is varied along said length of said member.

75. (New): An individually or substantial individually molded member with at least one textured side surface for use as a railroad tie or other structural member, comprising:
a molded member having a plurality of side surfaces and comprised of
a mixture of:
from about 25% to about 55% of a thermoplastic polymer;
from about 4% to about 55% of a rubbery polymeric
component; and
from about 4% to about 55% of a reinforcing filler;
wherein at least one side surface of the member is textured after the member is molded.

76. (New): The member of Claim 75, wherein said member has a plurality of textured side surfaces.

77. (New): The member of Claim 75, whereby said surface is textured by applying an embossing pattern under heat and pressure to melt and deform at least one side surface of the member.

78. (New): The member of Claim 75, wherein said at least one textured surface comprises a plurality of indentations at least about 1/8 inch deep.

79. (New): The member of Claim 75, wherein said member is a tie and wherein said at least one textured surface comprises a plurality of indentations that provide surfaces perpendicular to a longitudinal axis of the tie.

80. (New): The member of Claim 75, wherein said at least one textured surface comprises a plurality of indentations at least about 1/4 inch wide, but less than about 6 inches wide.

81. (New): The member of Claim 75, wherein said at least one textured surface provides corners or indentations to capture and hold ballast.

82. (New): The member of Claim 80, wherein said member is a tie having a plurality of sides with a textured surface comprising indentations that provide resistance to force across at least about 10% of said textured surface.

83. (New): A method for making an individually or substantially individually molded member with at least one textured side surface for use as a railroad tie or other structural member, comprising:

providing a molded member having a plurality of side surfaces that is comprised of a mixture of:

from about 25% to about 55% of a thermoplastic polymer;
from about 4% to about 55% of a rubbery polymeric
component; and
from about 4% to about 55% of a reinforcing filler; and
texturing at least one side surface of the member
after the member is molded.

84. (New): The method of Claim 83, wherein said member has a plurality of textured side surfaces.

85. (New): The method of Claim 83, further comprising the step of texturing said at least one surface by applying an embossing pattern under heat and pressure to melt and deform said at least one surface.

86. (New): The method of Claim 83, wherein said at least one textured surface comprises a plurality of indentations at least about 1/8 inch deep.

87. (New): The method of Claim 83, wherein said member is a tie and wherein said at least one textured surface comprises a plurality of indentations that provide surfaces perpendicular to a longitudinal axis of the tie.

88. (New): The method of Claim 83, wherein said at least one textured surface comprises a plurality of indentations at least about 1/4 inch wide, but less than about 6 inches wide.

89. (New): The method of Claim 83, wherein the textured surface of said member provides corners or holes to capture and hold ballast.

90. (New): The method of Claim 88, wherein said member is a tie having a plurality of sides with a textured surface comprising indentations that provide resistance to

force across at least about 10% of said textured surface.

91. (New): An improved system for supporting railroad rails, comprising:
a molded railroad tie, comprised of a mixture of
from about 25% to about 55% of a thermoplastic polymer;
from about 4% to about 55% of a rubbery polymeric
component;
from about 4% to about 55% of a reinforcing filler;
wherein the railroad tie has at least two side surfaces, a bottom surface,
and a first end and a second end, wherein at least one side surface and the bottom surface is
textured after molding and wherein the texturing comprises indentations at least about $\frac{1}{4}$
inch wide, but less than about 6 inches wide;
ballast placed below and around the railroad tie; and
steel rails mounted on the railroad tie.

92. (New): The system of Claim 91, wherein the textured surface comprises
indentations that provide surfaces perpendicular to the longitudinal axis of the railroad tie that
increases the frictional force between the railway crosstie and the ballast.

93. (New): The system of Claim 91, wherein the textured surface resists a force
by means of friction against the ballast placed below and around the railroad tie.

94. (New): The system of Claim 91, wherein the force is imposed by train wheels
and wherein the indentations provide resistance to force across at least about 10% of the
textured tie surface.